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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/705,351	11/03/2000	Yuichi Ijiri	4296-125	6855

7590 10/04/2007
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EXAMINER

FORD, JOHN K

ART UNIT	PAPER NUMBER
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3744

MAIL DATE	DELIVERY MODE
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10/04/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/705,351	Applicant(s) IJIRI ET AL.	
	Examiner John K. Ford	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on July 16, 2007
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 18, 25-27 and 30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 18, 25-27 and 30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Applicant's response of July 16, 2007 has been given careful consideration. Claim 1 has been amended to add the substantive limitation that the vent pipe is "fixed via a flange to the boundary between upper tube sheet and the shell". Claim 26 has been amended in such a way that counsel argues the combination of the heat exchanger and sources of specific materials acted upon by the heat exchanger is being claimed. Essentially the argument goes that the combination claimed in claim 26 is now that of a heat exchanger in combination with a source of "easily polymerizable substance" and source of "low temperature fluid". Counsel urges that this is structure (apparently like a tank full of these substances, only without reciting the tank). That of course is not what is claimed in claim 1 (which claims a heat exchanger, *per se*), so counsel is simply apparently changing the overall combination claimed in claim 26. Counsel argues that this is not disclosed in the prior art. The examiner disagrees with all of these arguments.

Counsel addresses no remarks as to whether Ogata shares a common inventor with the current application and, if so, whether the requested review of the patent holdings of applicant/assignee has turned up any other relevant prior art.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 18, 25, 26, 27 and 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 as amended is unclear. It is particularly unclear what is being claimed when read in conjunction with counsel's remarks in counsel's July 16, 2007 response. The examiner starts first with what the examiner understands. The recitation "at least part of the vent pipe being made of the upper tube sheet" is clear enough. Both applicant's Figure 2 and Figure 3 show that. Applicant then goes on the claim that the same vent pipe is "fixed via a flange to the boundary between the upper tube sheet and the shell", where the "boundary" appears to be defined earlier in the claim as "the underside of the upper tube sheet". The problem with this recitation is that it doesn't appear to accurately describe the structure disclosed in Figure 2 (the elected species). Part of the pipe 206 (the bottom half) is connected to the bottom of a flange portion 212 of the upper tube sheet 208, which is located outside of the shell. By disclosure the flange is just the outer periphery of the tube sheet and not another structure as claim 1 at least implies. Claim 1 therefore amounts to a double inclusion of the same piece of structure by two different names, first as a "tube sheet" and then as a "flange". It is also now unclear what precisely constitutes the "boundary" between the upper tube sheet and the shell. Is it just the area where the shell and tube sheet are in contact? Or is it the entire underside of the tube sheet both inside and outside the shell? Or is it only the underside of the tube sheet located outside of the shell (i.e. the underside of the flange

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portion)? Is it only the underside of the tube sheet inside the shell (i.e. the underside of the shell not including the flange portion)? All of the possibilities make the claim vague and difficult to understand.

Claim 26 is vague because the term "easily polymerizable substance" is vague. While the specification offers a few examples of specific substances it does not set forth with adequate precision the metes and bounds of the words "easily" as a modifier for the term "polymerizable substance". Applicant's specification provides no standard for measuring the degree of "ease" in the aforementioned phrase. See Seattle Box v. Industrial Crating, 221 USPQ 568, 573 (Fed. Cir. 1984).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teachings of either Deuse (USP 4,236,576) or McNeal (USP 2,181,704) and Ogata (USP 6,582,667) and optionally further in view of Muri (USP 4,562,887).

Apparently counsel feels that the examiner has not presented a prima facie case because the examiner has failed to walk counsel through every reference and engage in a Supreme Court quality Graham v. Deere analysis. The examiner would certainly do this if he was given time by the PTO to do the same. The abbreviated version will have to suffice. Unfortunately, time is very precious in the sense that every minute spent flushing out every detail in references that counsel can read for oneself is less time spent on the more important task of searching the prior art. Moreover, applicant's failure to bring the Ogata reference (if indeed Ogata and the current application share an inventor) to the examiner's attention at the appropriate time translated into the examiner wasting a significant amount of time turning up prior art that applicant (if there is an overlap in inventorship) was under an obligation to produce. Moreover, counsel is familiar with McNeal and Deuse from many previous office actions. Counsel has never previously questioned the examiner about not understanding these references and it seems disingenuous to do so now. Finally, in the telephone interview on March 28, 2007, counsel, to the examiner's recollection, never mentioned not being able to understand McNeal and Deuse and needing a full Graham v. Deere analysis before the rejection could be comprehended.

Ogata is apparently applicant's own work, so the examiner does not believe it is productive or necessary to review what applicant is already familiar with and can be easily read and understood. Nonetheless, Ogata fairly teaches in Figures 3 and 4B a vent pipe that is at least in part formed by the underside of the tube plate. Ogata

explicitly discloses the purpose of this half-round pipe 14 shown in Figure 4B improves the ease of welding to the underside of the upper tube plate and ease of degassing (as disclosed in col. 5, lines 65-67 of Ogata). Regarding counsel's argument that a half-pipe isn't being explicitly claimed in claim 1, it is submitted that this is irrelevant. The proper inquiry is whether Ogata in Figures 3 and 4B shows "at least a part of one end of the vent pipe being made of the upper tube sheet" and clearly it does. Counsel must understand that. The question is whether the structure disclosed in the prior art meets the claimed limitation, not whether the claimed limitation describes the structure shown in the prior art as counsel incorrectly focuses on. That is basic patent law. The pipe 14 is shown passing outside the shell in Figure 3. There is no flange portion of the tube sheet 6a shown extending outside the shell in Figure 3, but arguably applicant hasn't even claimed the same in claim 1. Arguably the outer periphery of the tube sheet 6a in Figure 3 could be considered a flange within the dictionary definition of the term.

Notwithstanding that flanges on the peripheries of tube sheets are so well known in the art (already of record here) that the examiner is at a loss to understand why this could possibly rise to the level of patentability. Even applicant's own admitted prior art Figure 1 shows a flange portion of the upper tube sheet extending outside the shell. Moreover Muri (USP 4,562,887) fairly discloses by comparison of Figures 1 and 2, the **art recognized equivalence** of tube sheets without a peripheral flange outside the shell (Figure 1) and those tube sheets with a peripheral flange outside the shell (Figure 2).

To have formed either of the upper vent conduits of McNeal or Deuse as taught by Figures 3 and 4B of Ogata (conduit 14) would have been obvious to one of ordinary skill in the art for the purpose improving the ease of welding to the upper tube plate and ease of degassing (as disclosed in col. 5, lines 65-67 of Ogata). Both McNeal and Deuse have flange portions of their respective tube sheets extending outside their respective shells and to have welded tube 14 of Figure 4B all the way out to the periphery of the tube sheet, wherever it lies (inside or outside of the shell) would have been obvious to one of ordinary skill in the art and is fairly taught by Figures 3 and 4B, notwithstanding counsel's attempts to suggest otherwise.

Alternatively to have formed Ogata with an upper tube sheet that extends beyond the outer periphery of the shell as taught by any one of McNeal or Deuse or Muri (Muri being relied upon merely to teach the well known art recognized equivalence of the two types of tube sheets) for the purpose of facilitating the assembly and disassembly of the heat exchanger as well as inspection of the periphery of the tube sheet would have been obvious to one of ordinary skill in the art.

Claims 18 and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art as applied to claims 1 and 5 above, and further in view of Brucher et al (USP 5,035,283).

Figure 1 of Burcher shows a "drain pipe" with an inlet portion 11, an annular portion 10, lower tube sheet portion 7 and outlet portion 23 and the "other end" of which is connected to shell 2 (where pipe 23 connects to shell 2 which passes the same fluid as the drain pipe). To have provided either of Deuse/Ogata or McNeal/Ogata with a bottom tube sheet and drain pipe construction such as disclosed by Burcher at 11, 7, 10 and 23 to allow for high temperature operation would have been obvious to one of ordinary skill in the art.

Alternatively, to have provided Burcher with a top tube sheet construction and upper vent as disclosed in either Deuse/Ogata or McNeal/Ogata would have been obvious to one of ordinary skill in the art to advantageously improve heat transfer by venting non-condensable gasses.

Regarding claim 25, see valve 61 of McNeal. The valve is located in a location that satisfies claim 25, notwithstanding counsel's arguments. Counsel will have to add more limitations to the claims to define over this prior art. In other words, claim 25 is broader than counsel's remarks suggest.

Regarding claim 26, intended fluids to be used in an apparatus do not impart patentability to an otherwise known or obvious apparatus. See MPEP 2114, incorporated here by reference. The apparatus does not undergo a metamorphosis into a new apparatus merely by affixing instructions to it to use it with polymerizable

substances. In the alternative and this argument is only necessary if the word "source", everywhere that it appears in claim 26, is determined to be a structure like a tank filled with the substances in question. The examiner does not accept this interpretation, but addresses it here only to advance prosecution to final closure. Referring to Ogata, the substance that enters the top of that vertical tube and shell heat exchanger is among other things methacrylic acid as disclosed in col. 1, lines 58-63, among other materials. This is the same substance applicants disclose on page 11 of their specification. Furthermore, in column 3, lines 13-15 of Ogata the use of a coolant is disclosed for the shell-side fluid.

It is submitted, therefore, that in view of the teachings of Ogata it would have been obvious to have connected the heat exchanger discussed above in reference to the rejection of claim 18, to a tube-side source of easily polymerizable substance (such as methacrylic acid) and a source of shell side coolant, to advantageously process the reactant(s) to the desired final product.

Likewise, the intended manner of operating the device in regard to claim 27 does not impart patentability to an apparatus claim. See MPEP 2114. Finally, the stirring will be inherent any time fluid is added to the shell side of the heat exchanger in that the fluid already inside the shell will be displaced and agitated by the newly added fluid (i.e. "stirred", in the broadest sense). The examiner has no evidence of this inherency other than to call counsel's attention to the fact that in applicant's own disclosure the claimed

"stirring" is caused by merely adding fluid through the drain port. If that qualifies as "stirring", then that is what the examiner has shown counsel in the prior art. Counsel cannot take the word out of context and give it a narrower meaning than the specification and drawings will support. One cannot boot-strap claim language into new disclosure.


Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John K. Ford whose telephone number is 571-272-4911. The examiner can normally be reached on Mon.-Fri. 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



John K. Ford
Primary Examiner